

Application No.: 10/758071

Docket No.: TOW-059

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A friction stir welding method of joining an abutment portion by moving a rotating probe relatively along said abutment portion while pressing said probe against one surface of said abutment portion at which an end of a first cylindrical member and an end of a second cylindrical member are butted together, said friction stir welding method comprising the steps of:

externally fitting said first and second cylindrical members on a backing jig having a different thermal expansion relative to said first and second cylindrical members while said first and second cylindrical members are relatively expanded and then relatively contracted as compared with said backing jig so that the entire circumference of another surface of said abutment portion is in close contact with the entire outer circumferential surface of said backing jig;

performing friction stir welding on said one surface of said abutment portion while retaining said other surface of said abutment portion with said backing jig; and

separating said backing jig from said other surface of said abutment portion after said friction stir welding by relatively thermally expanding said first and second cylindrical members as compared with said backing jig.

2. (Canceled)

3. (Canceled)

4. (Currently Amended) The friction stir welding method according to claim 1, wherein said first and second cylindrical members are welded by said friction stir welding along said abutment portion while a pressing force is applied in a direction substantially perpendicular to a direction of insertion of said probe and a direction of abutment of said first and second cylindrical members.

Application No.: 10/758071

Docket No.: TOW-059

5. (Original) The friction stir welding method according to claim 1, wherein said outer circumferential surface of said backing jig has a completely circular shape, and circumferences of said ends of said first and second cylindrical members, which are in close contact with said outer circumferential surface, have an identical length.

6. (Withdrawn) A friction stir welding apparatus for joining an abutment portion by moving a rotating probe relatively along said abutment portion while pressing said probe against one surface of said abutment portion at which an end of a first cylindrical member and an end of a second cylindrical member are butted together, said friction stir welding apparatus comprising:
a pedestal member on which said first and second cylindrical members are fixed;
a backing jig on which said first and second cylindrical members are externally fitted so that another surface of said abutment portion has a predetermined circumferential length, said backing jig being separated from said abutment portion after friction stir welding; and
a pressing mechanism which applies a pressing force to said abutment portion.

7. (Withdrawn) The friction stir welding apparatus according to claim 6, wherein said pressing mechanism applied said pressing force to said first and second cylindrical members in a direction substantially perpendicular to a direction of insertion of said probe.

8. (Withdrawn) The friction stir welding apparatus according to claim 6, wherein an outer circumferential surface of said backing jig has a completely circular shape, and circumferences of said ends of said first and second cylindrical members, which are in close contact with said outer circumferential surface, have an identical length.

9. (Withdrawn) The friction stir welding apparatus according to claim 6, further comprising a clamp jig which is arranged on said one surface of said abutment portion and which prevents said abutment portion from deformation during said friction stir welding.